UPSTREAM DETERMINANTS OF DOWNSTREAM DISPARITIES: THE CASE OF DIABETES

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9 Galen St.
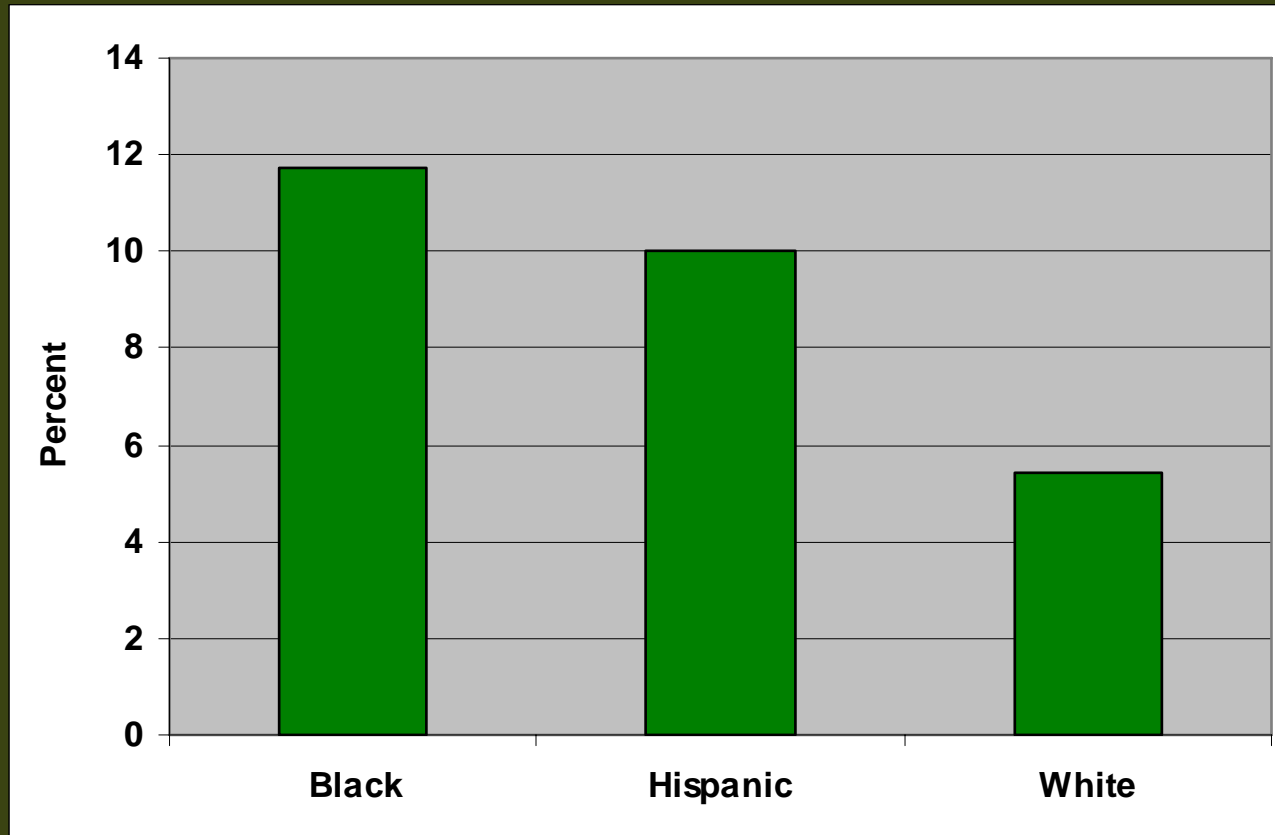
Watertown, MA 02472

1. OUTLINE OF TALK

- Introduction – race/ethnic disparities.

- Theoretical background (social construction).

- The research approach (factorial experimentation).
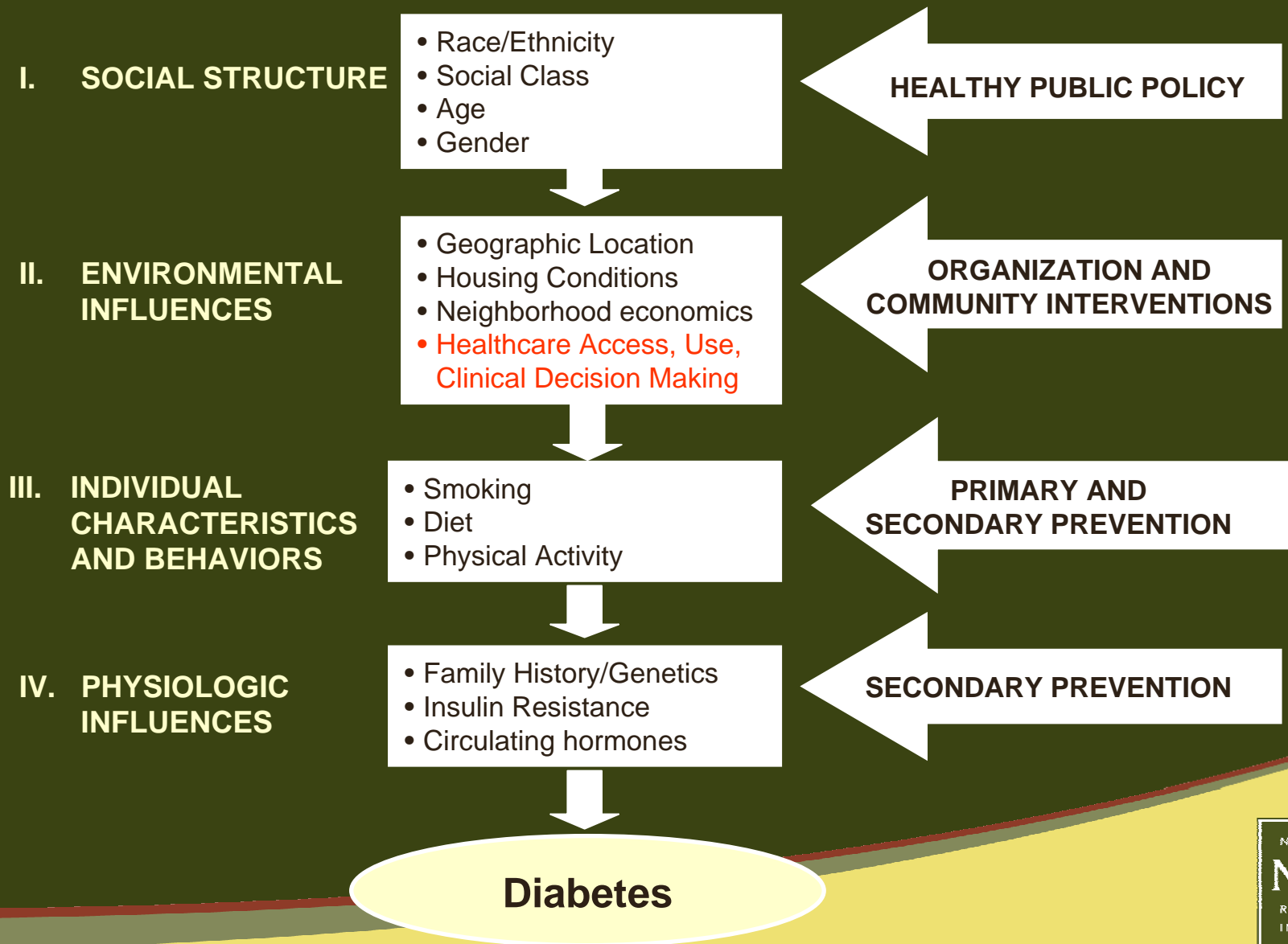
- Some results.

- Conclusions and Implications.

POVERTY
ACCESS TO CARE
ENVIRONMENTAL EXPOSURE
RACISM

WHY IS HE LOOKING AT RISK FACTORS AND BEHAVIORS WHEN THE KEY LIES IN SOCIAL DETERMINANTS?

LOOKING IN A DIFFERENT PLACE FOR THE KEY

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OFFICIAL VIEW: THE AGE STANDARDIZED PREVALENCE OF DIABETES

NHANES: 1999-2006

LEVELS OF CAUSATION AND CORRESPONDING TYPES OF HEALTH INTERVENTION

I. SOCIAL STRUCTURE
- Race/Ethnicity
- Social Class
- Age
- Gender

← **HEALTHY PUBLIC POLICY**

II. ENVIRONMENTAL INFLUENCES
- Geographic Location
- Housing Conditions
- Neighborhood economics
- Healthcare Access, Use, Clinical Decision Making

← **ORGANIZATION AND COMMUNITY INTERVENTIONS**

III. INDIVIDUAL CHARACTERISTICS AND BEHAVIORS
- Smoking
- Diet
- Physical Activity

← **PRIMARY AND SECONDARY PREVENTION**

IV. PHYSIOLOGIC INFLUENCES
- Family History/Genetics
- Insulin Resistance
- Circulating hormones

← **SECONDARY PREVENTION**

Diabetes

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GENETICS

- Some promising developments.

- Differences between people don't explain magnitude of differences in disease.

- Genetic reductionism – "the new genetics is the old germ theory in disguise" (MacMichael).

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BOSTON AREA COMMUNITY HEALTH SURVEY: TESTOSTERONE VERSUS AGE BY RACE/ETHNICITY
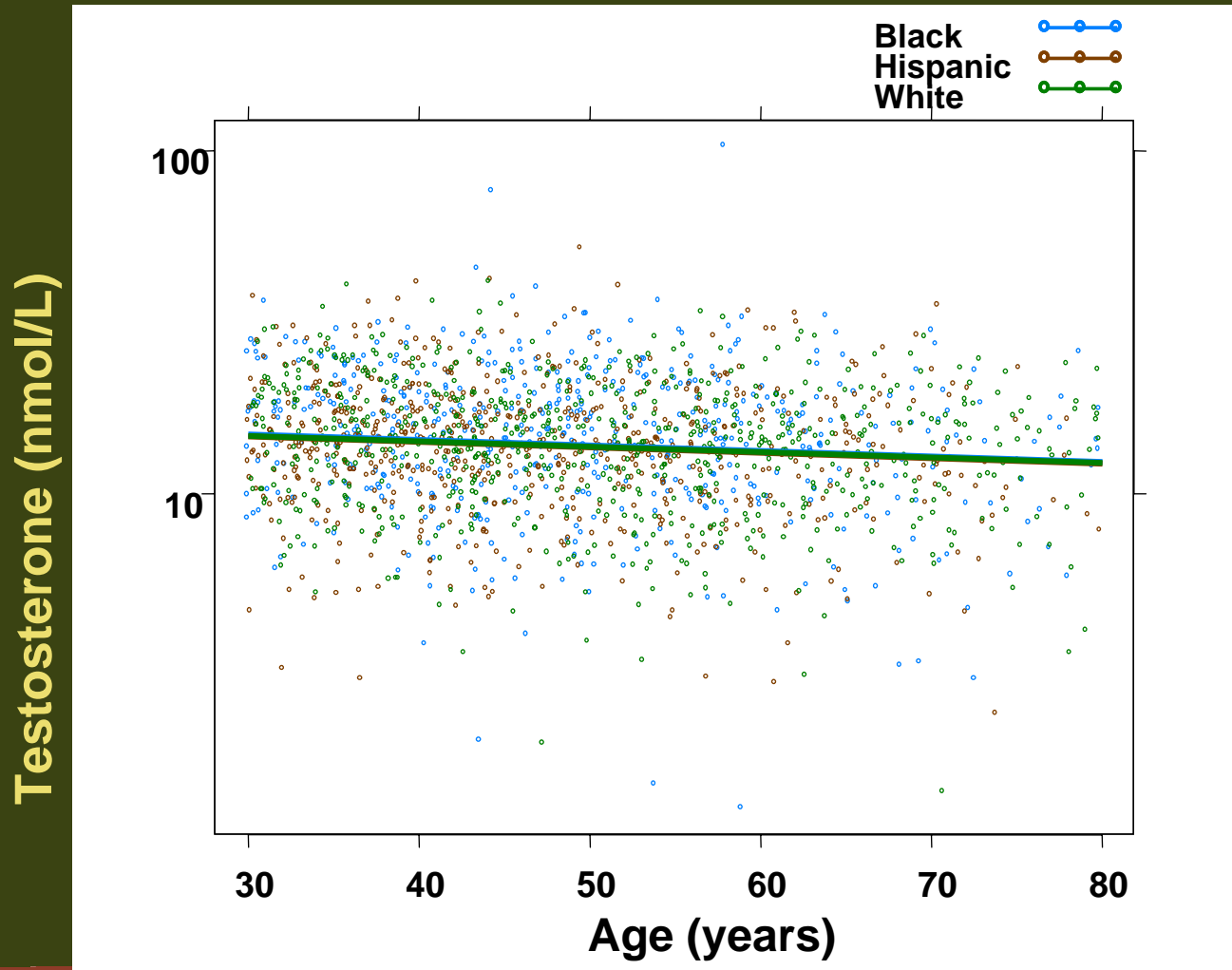
VARIANCE EXPLAINED

Unexplained (88.2%)
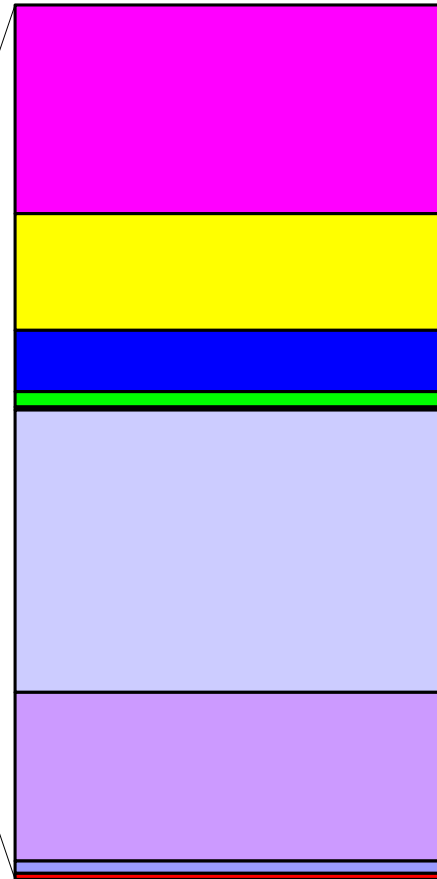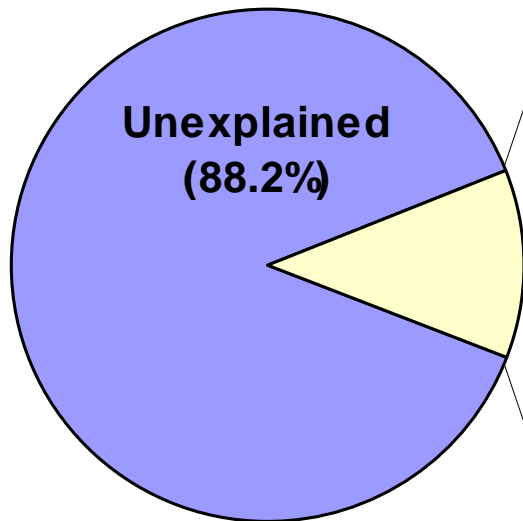
Legend:
- Unexplained
- BMI
- SES
- Physical Activity
- Health Insurance
- Smoking History
- Age
- Family History of Diabetes
- Gender
- Race/Ethnicity

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PREVALENCE OF DIABETES BY RACE/ETHNICITY AND SES
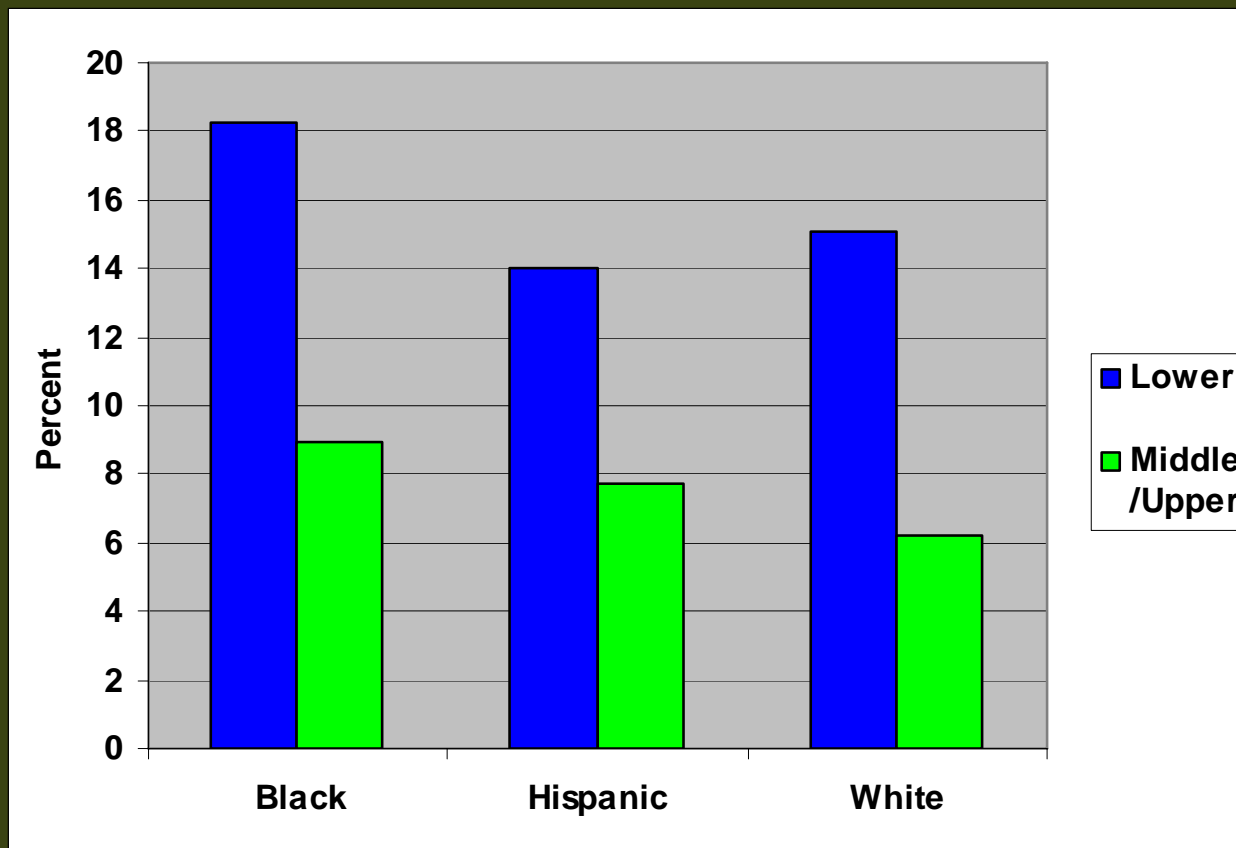
BACH: 2002-2005

2. THEORETICAL BACKGROUND

WHO'LL BE COUNTED AT THE END?

FINISH

WHAT'S COVERED?

DOCTOR'S DECISIONS

HEALTH INSURANCE

SYMPTOM RECOGNITION
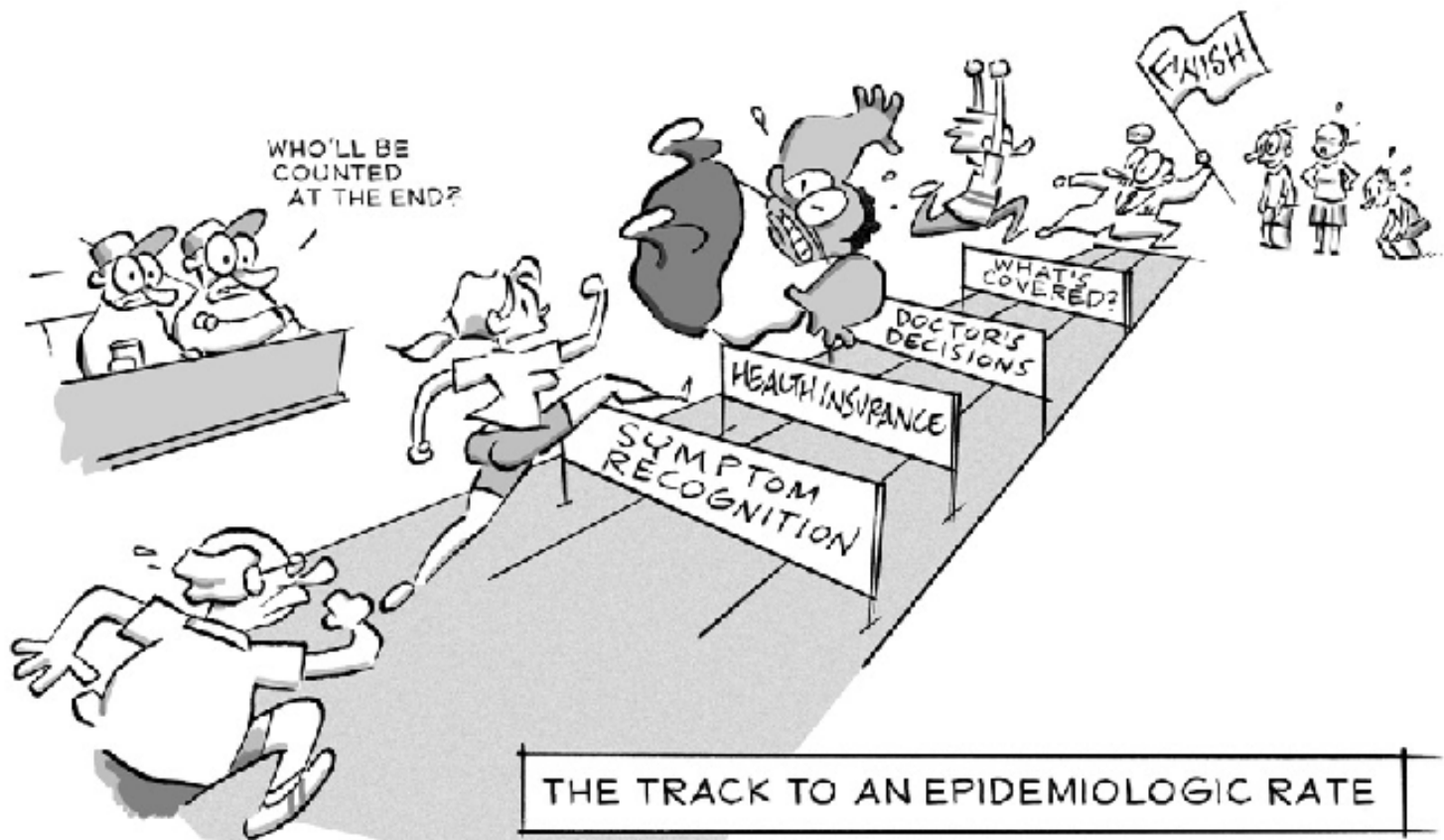
THE TRACK TO AN EPIDEMIOLOGIC RATE

New England Research Institutes, Inc. 2007
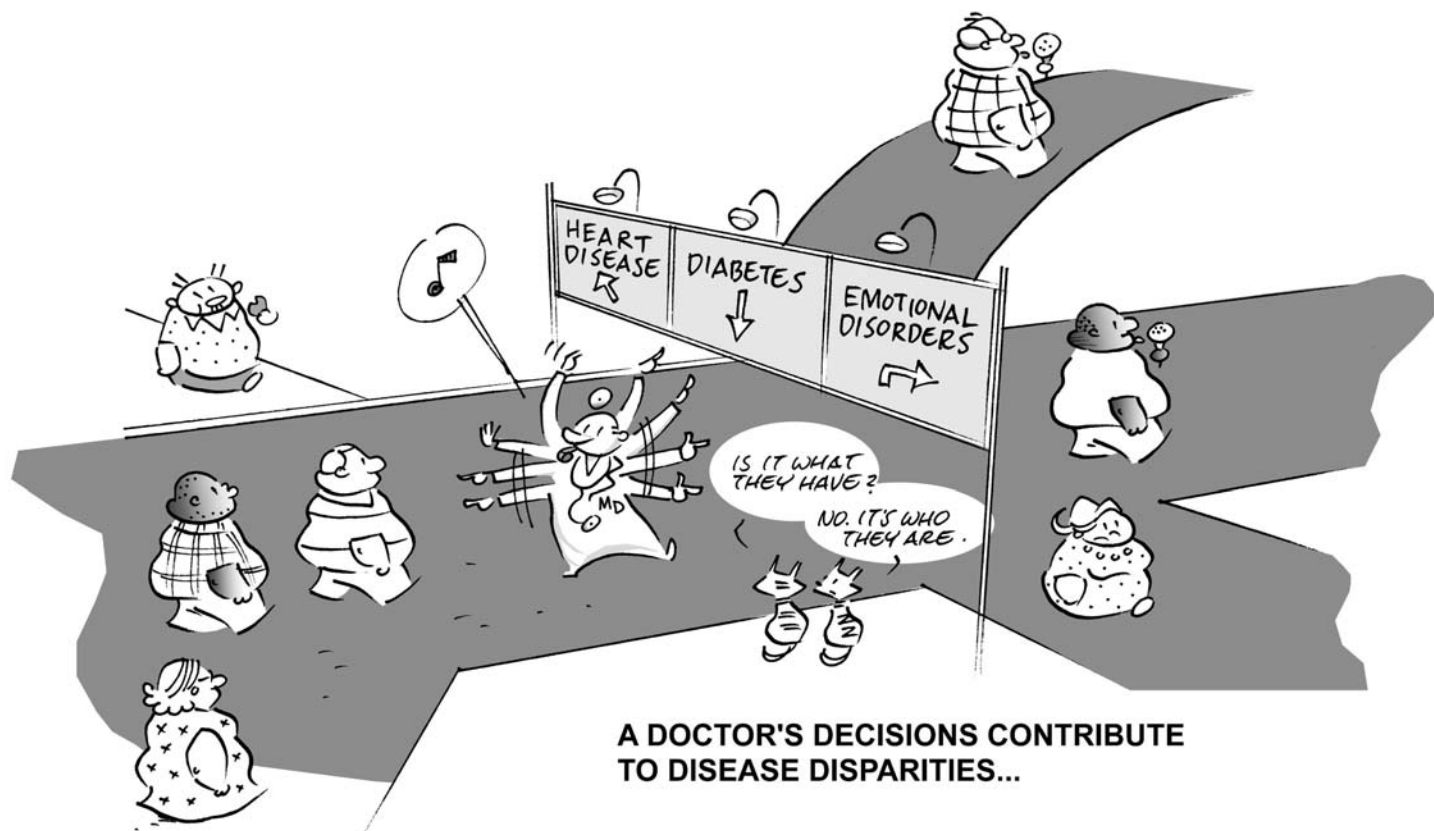
A DOCTOR'S DECISIONS CONTRIBUTE TO DISEASE DISPARITIES...

THE PIVOTAL ROLE OF THE DOCTOR-PATIENT ENCOUNTER (CDM) IN THE CONSTRUCTION OF RATES
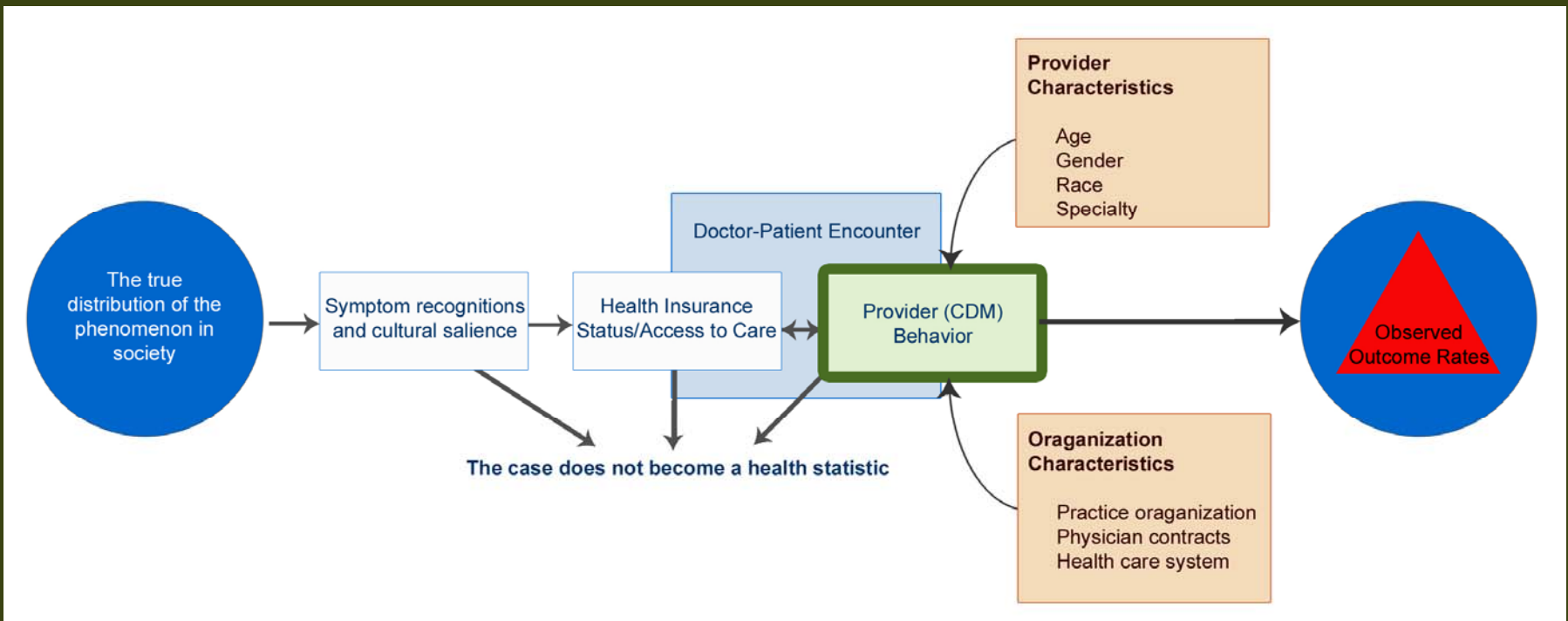
SELF-FULFILLING PROPHECY

"When people define situations as real, they become real in their consequences"

(W.I. Thomas)

"…in the beginning, a <u>false</u> definition of the situation evokes a new behavior which makes the originally false conception come true. (It) perpetuates a reign of error"

(Robert Merton)

3. THE RESEARCH APPROACH
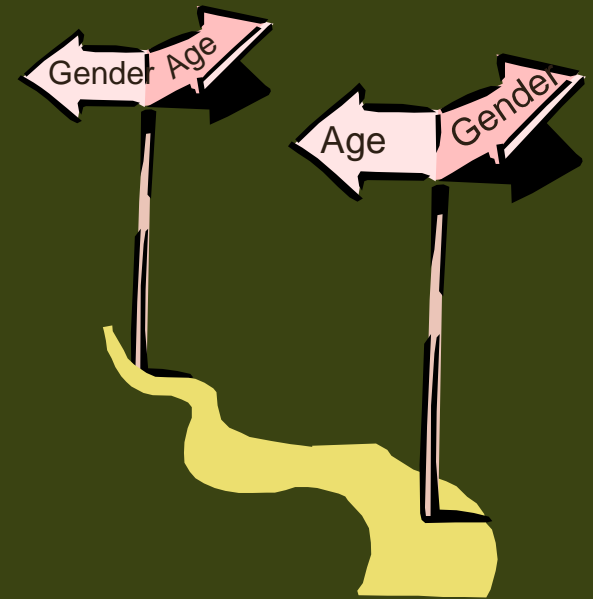## (Factorial Experimentation)

ASSOCIATION VS CAUSATION

- <u>Observational Studies</u> –
  Through multivariate techniques, provide "confounded" estimates of associations.

- <u>Randomized Experiments</u> –
  Provide unconfounded estimates of cause-effect relationships.

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TWO EXPERIMENTS

"Patient" with

1. Undiagnosed symptoms clearly suggesting diabetes.

   Physicians task is diagnoses and test-ordering

2. Already diagnosed diabetes with emerging peripheral neuropathy.

   Physicians task is management

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WHY DIABETES?

- Major public health problem ("21st century epidemic").

- Subject to "rule of halves".

- Most is presented to and managed by primary care doctors.

- Race/ethnic disparities widely accepted as real.

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FACTORIAL EXPERIMENT

Patient Factors

- Age (35 or 65)
- Gender (Female or Male)
- Race/Ethnicity (Black, Hispanic, White)
- Socioeconomic status (occupation janitor or lawyer)

Physician Factors

- Gender (Female or Male)
- Experience (year of graduation from medical school – more experienced graduated between 1969 and 1983, less experienced graduated between 1993 and 1999)
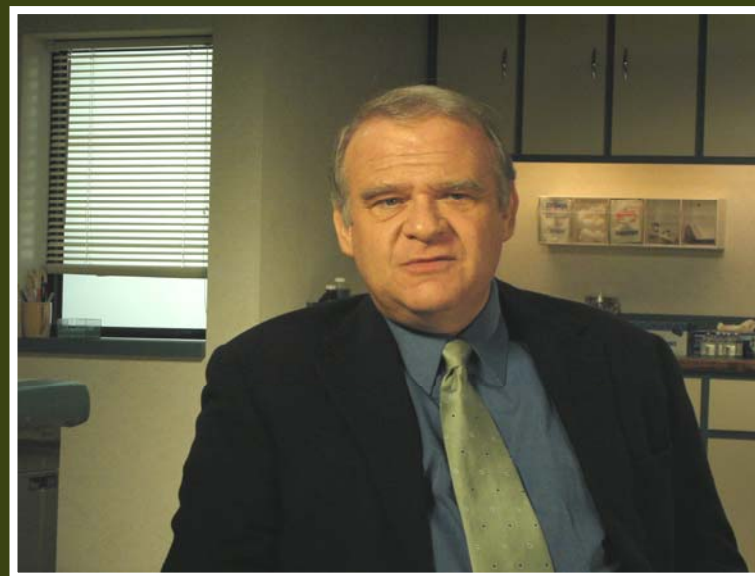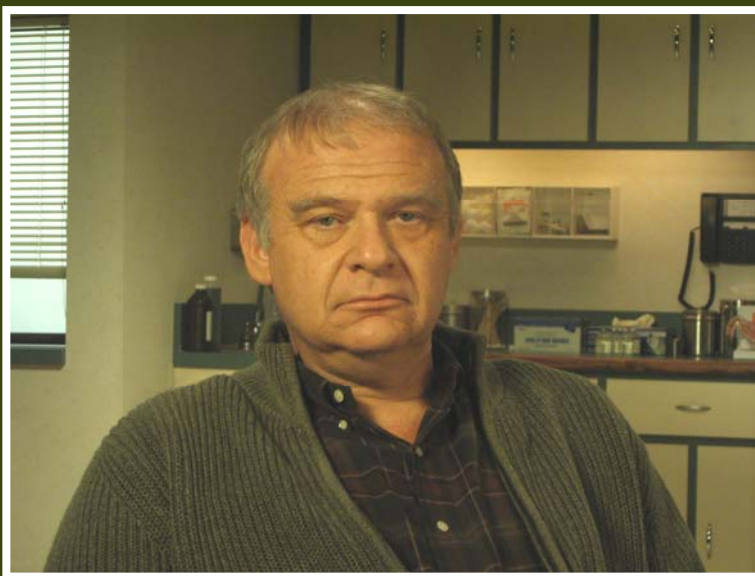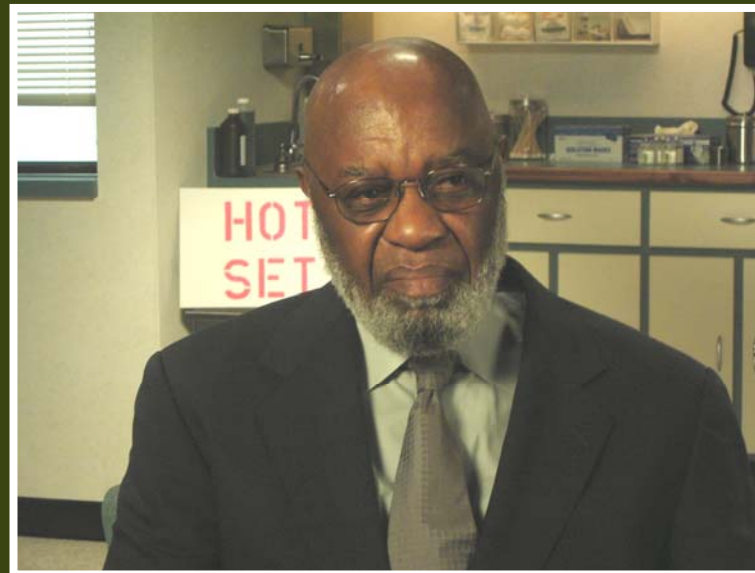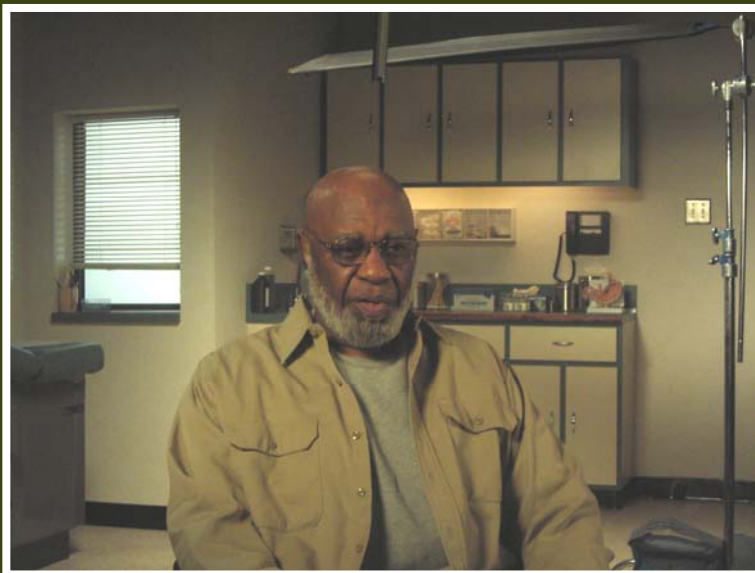- (US trained)

All factors are orthogonal.

COMPONENT FACTORS OF THE INTERVENTION

Patient Characteristics

AGE	35 years	65 years	
GENDER	Male	Female	
RACE/ ETHNICITY	White	Black	Hispanic
SES (occupation)	Janitor	Lawyer	
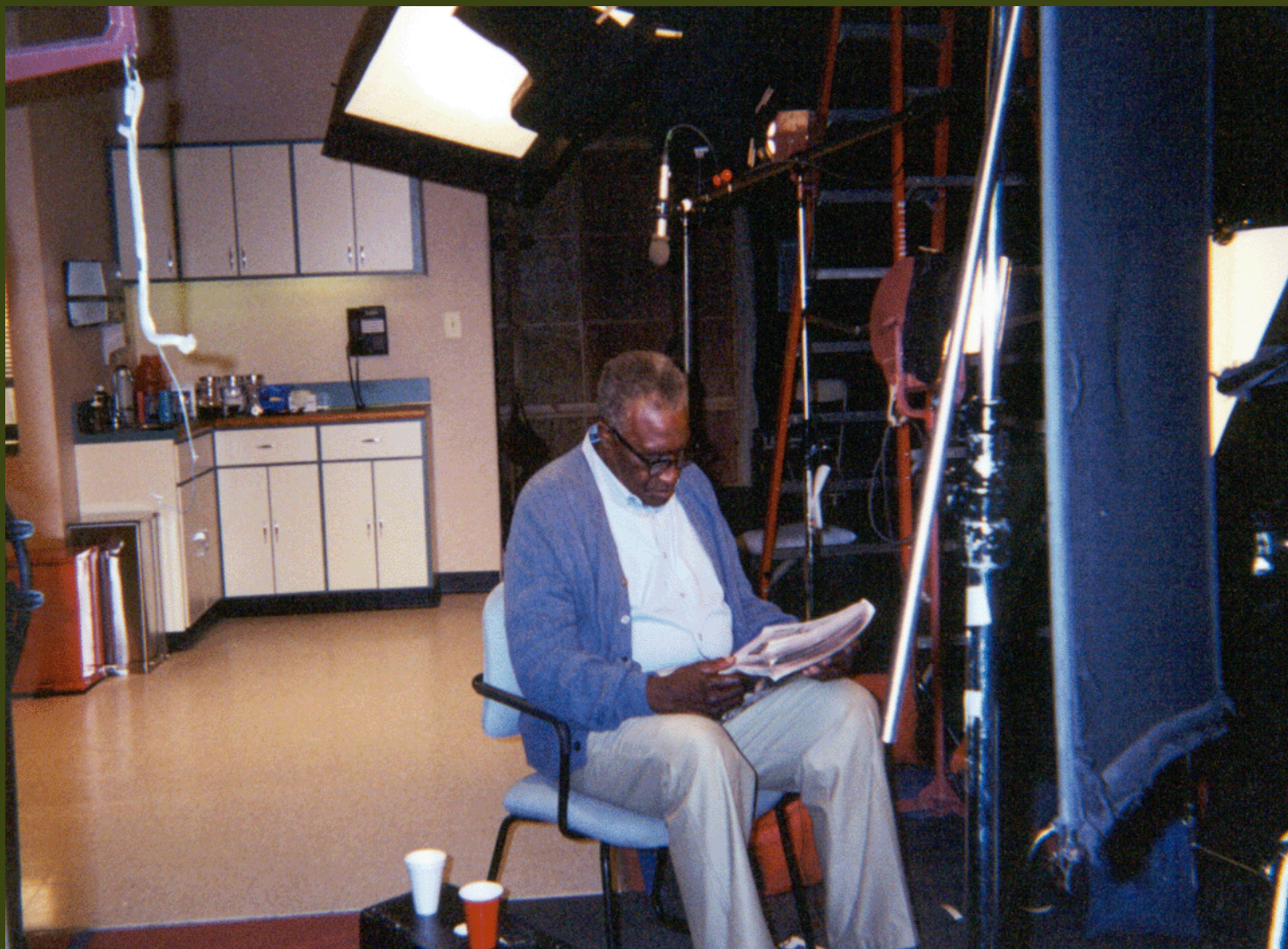
SIGNS / DISTRACTIONS DIABETES

Signs

- Thirst
- Fatigue
- Weight loss for more than 5 months without changing diet
- Not feeling well
- Overweight (nonverbal)

Distractions

- High blood pressure (135/95)
- Patient concern about heart disease
- Drinking a lot of caffeine
- Hasn't been to doctor for several years

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ADVANTAGES OF VIDEOTAPED CLINICAL SCENARIOS (OVER STANDARIZED PATIENTS AND WRITTEN VIGNETTES)

- Strict experimental control (standardization) assured (vs SP).

- Patients do not present on paper (vs. written vignette).

- Cost (vs SP).

- Can embed non-verbal cues (obesity, low affect, anxiety, demographics).

  "It's not what the patient says, it's how they look"

SELECTING THE DOCTORS

|	More Experienced Graduation 1969-1983	Less Experienced Graduation 1993-1999	
MALE	48	48	96
FEMALE	48	48	96
	96	96	192

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STATISTICAL POWER

- With 192 physicians

  ➢ 78.7% chance to detect a difference of .20 between two groups (e.g.40% of physicians do a monofilament/vibration test for lower SES vs. 60% for upper SES).

  ➢ 93.1% chance to detect a difference of .25.

MEASURE TO ENHANCE EXTERNAL VALIDITY

- Clinical scenarios developed through role playing with doctors.

- Field tested with other doctors.

- Use of professional talent (actors/actresses).

- Experienced clinicians present at filming.

- All interviews in doctors' offices during regular clinic.

- Requested to treat "patient", as if their own real patient.

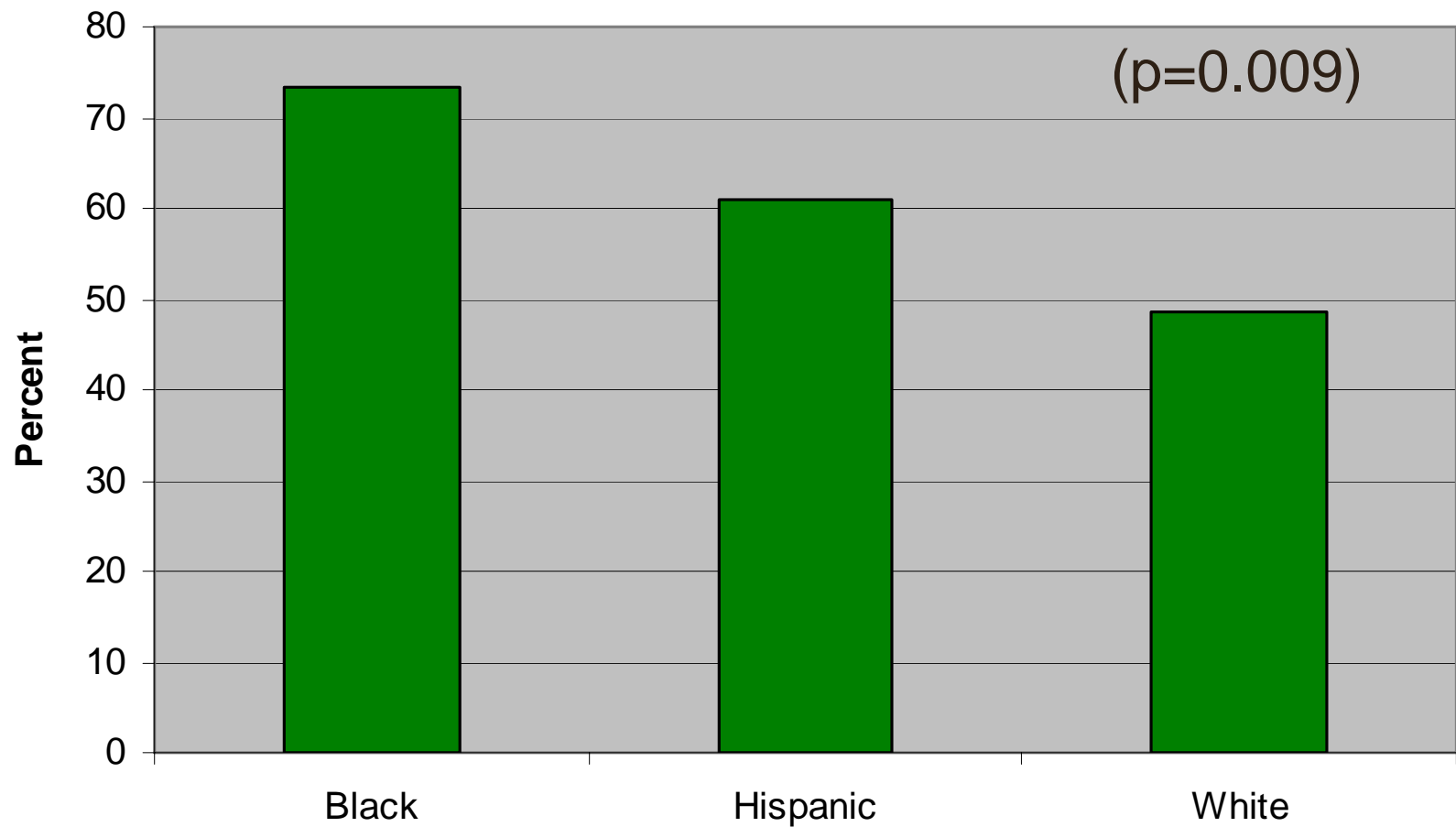- Asked how typical is patient in video (92%).
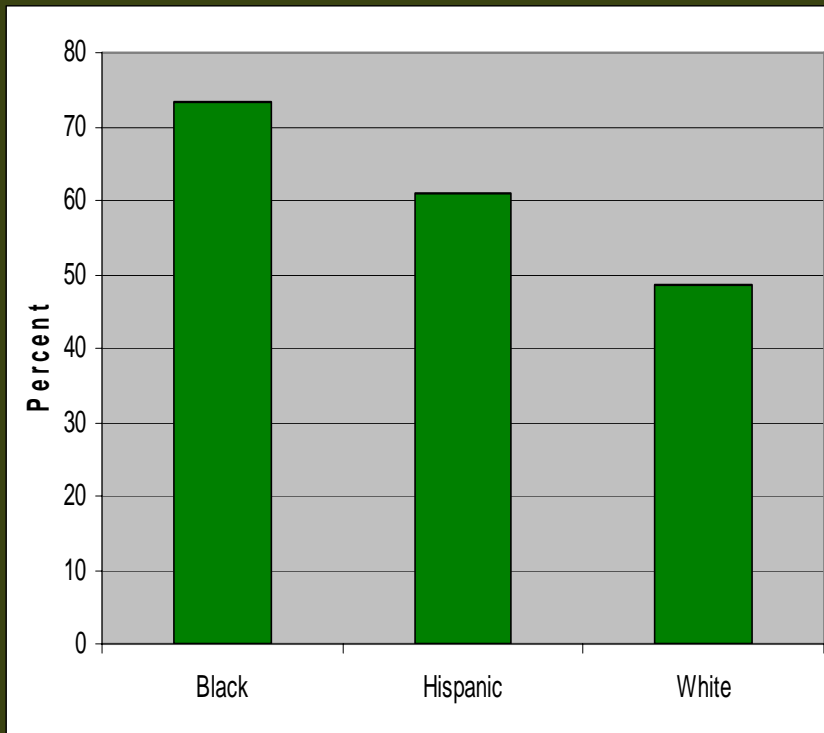
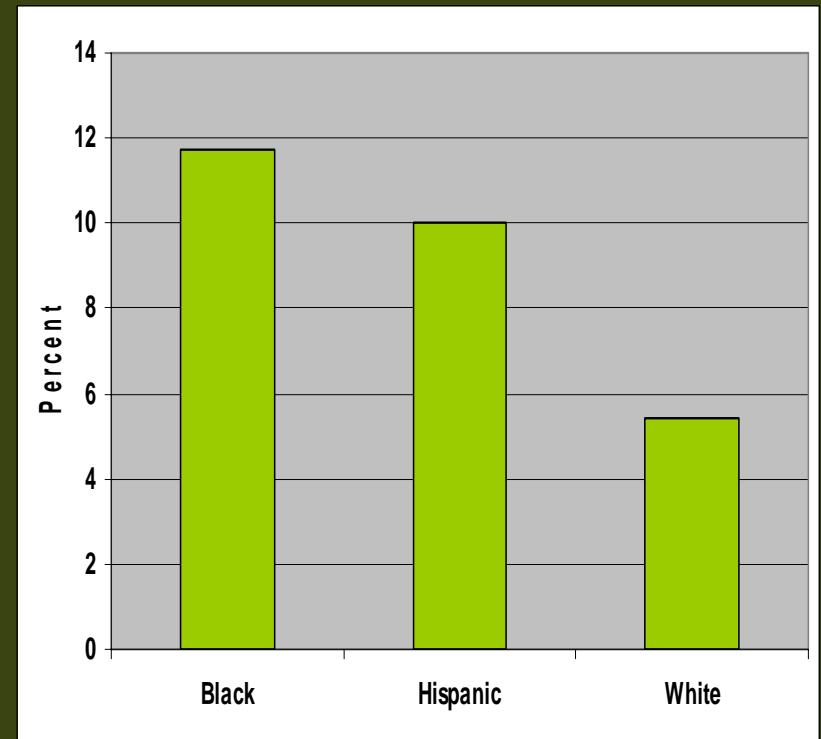# DIAGNOSES GIVEN BY PHYSICIAN SUBJECTS
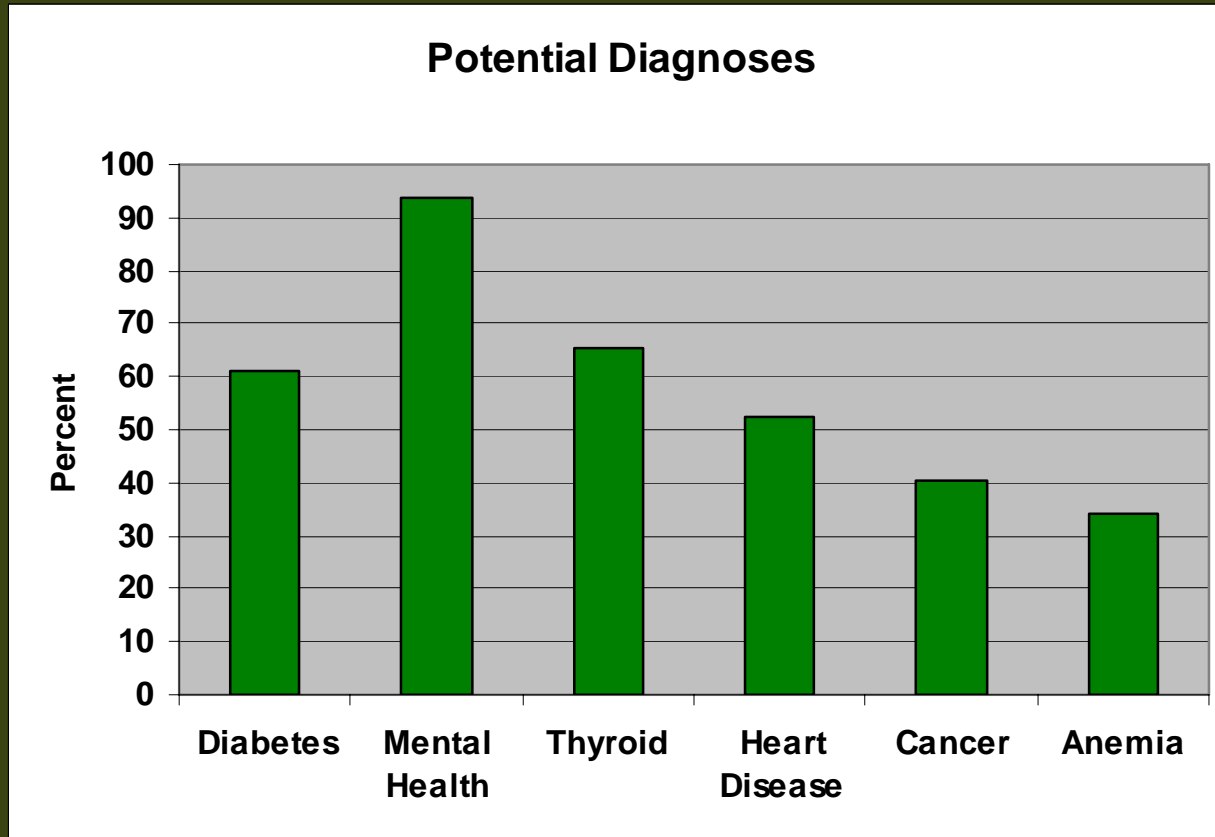
CERTAINTY OF THESE DIAGNOSES
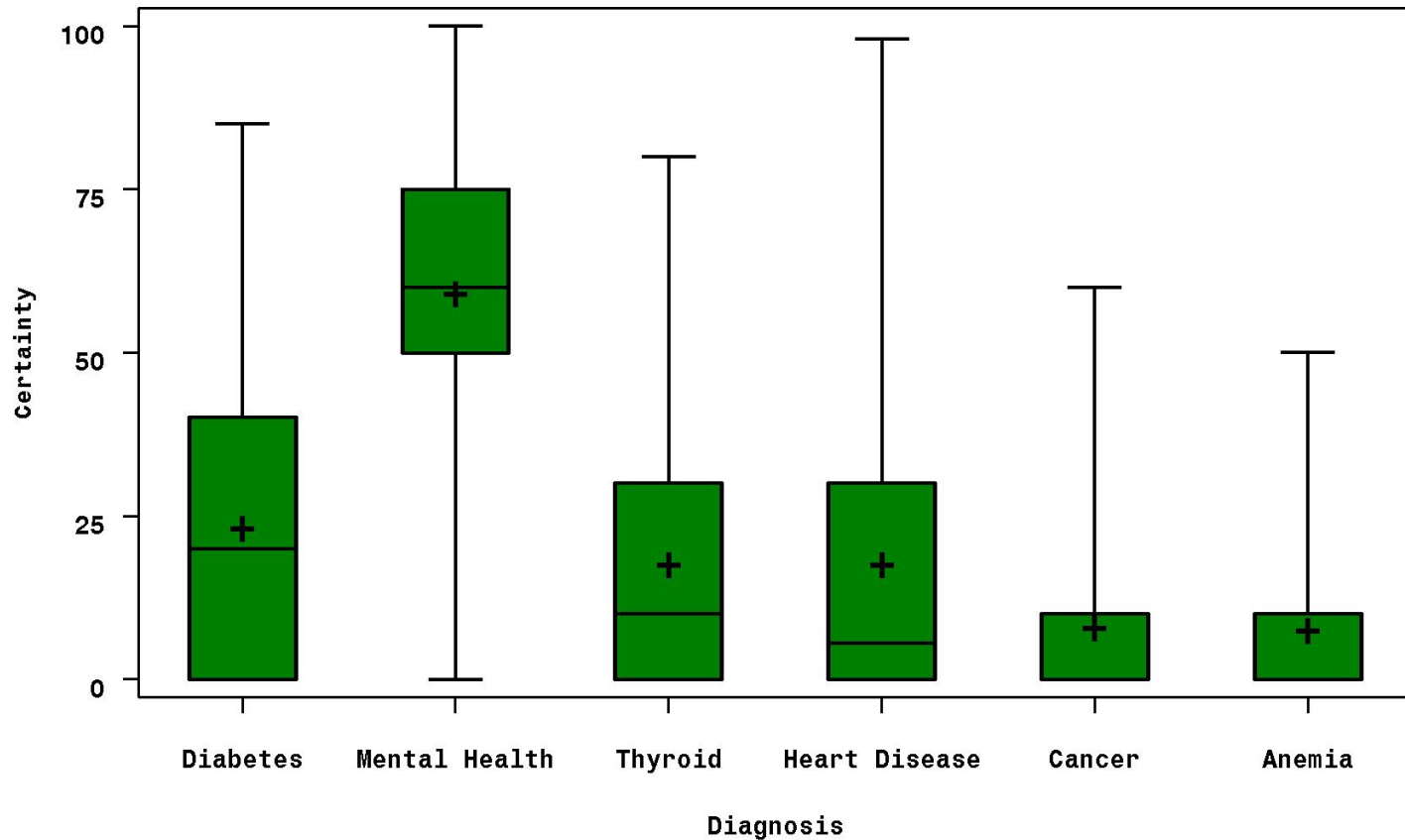
DIAGNOSIS OF DIABETES VARIES BY RACE/ETHNICITY

DIAGNOSIS OF DIABETES VARIES BY RACE/ETHNICITY

Experimental Results

US: NHANES 1999-2006

Age 20-80

SALIENT POINTS

- All "patients" presented <u>exactly the same signs and symptoms</u> of diabetes;

- Only 60 percent of doctors could correctly identify diabetes.

- There were significant (p=0.009) race/ethnic differences

  - ➢ Black patients (73%)
  - ➢ Hispanic patients (60%)
  - ➢ White patients (48%)

- The Differences in <u>diagnostic certainty</u> were significant and mirrored the above differences.

- Many other conditions diagnosed, with even higher levels of certainty.

- 24% of doctors initially diagnosing diabetes would not order any blood glucose test (as is recommended by clinical guidelines).

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5. CONCLUSIONS/IMPLICATIONS

- Many factors contribute to health disparities – some are immutable, some mutable.

- Physicians are pivotally involved in the social construction of race/ethnic disparities (and this remains understudied).

- Optimal research approach to disentangle the process is factorial experimentation – only way to get definitive (unconfounded) results.

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CONCLUSIONS

1. Widely accepted race/ethnic differences in diabetes do not accurately reflect the true epidemiologic prevalence of diabetes in the population.

2. While health care providers work to reduce/eliminate race/ethnic disparities they are pivotally involved (probably unconsciously) in their creation/amplification.